MASTER OF SCIENCE

INFORMATION RESOURCE MANAGEMENT

Systems and Engineering Management Department

PROGRAM GUIDE

GIR 02M

I. Purpose

The Graduate School of Engineering and Management, Department of Systems and Engineering Management offers the Master of Science with major in Information Resource Management (GIR). The program is designed to provide students with the knowledge and skills needed to oversee the information management and information systems needs of Air Force and DoD organizations in future assignments as middle and upper-level managers in the communications and information officer career field. This 18-month resident program culminates in the award of a Master of Science in Information Resource Management. The GIR program provides students with a broad perspective of DoD information issues, including information architectures, process support, and the implications of rapidly evolving information technology. The focus is on improving the student's understanding of, and ability to manage information in, today's dynamic information technology environment. In addition, students have the opportunity to focus in specific areas like information operations or advanced information resource management.

Program graduates are well grounded in course work related to follow-on assignments within the Communications and Information career field as well as other duties in support of information resource management at the base, MAJCOM, and higher levels. The output advanced academic degree (AAD) code is 1AUY.

II. Objectives

All graduates of the GIR program should be able to:

- Use effective oral and written communications.
- Understand and apply concepts and techniques of descriptive and inferential statistics to analyze problems under conditions of risk and uncertainty.

- Understand and apply the concepts, methods, and tools related to planning, directing, and controlling resources (people, material, equipment, and funds) in an information resource management context.

- Understand how to take advantage of information as a resource to improve organizational effectiveness.

- Know how information technology affects information as a resource and how it may modify existing organizational structure and working relationships.

- Learn to examine processes from beginning to end by employing innovative technologies and organizational resources.

- Learn to conduct strategic information planning to link information technology and systems to the organization's strategic business plan and help build control mechanisms to implement a strategic information plan.

- Conduct and present methodical research to solve problems and support decisions.

III. Admission Standards and Procedures

The general requirements for admission to the Information Resource Management Master of Science program in the Department of Systems and Engineering Management are:

- Baccalaureate degree or equivalent
- Cumulative undergraduate grade point average of at least 3.0 on a 4.0 scale
- Graduate Record Examination (GRE) score of 1100 with a minimum of 500 in each of math and verbal, or Graduate Management Admissions Test (GMAT) score of 550
- Mathematics through college algebra with a grade of C or higher.

Students in the Wright-Patterson area who do not meet these criteria may register for individual courses as a part-time student in order to demonstrate their ability to do satisfactory graduate work. Waivers to the above requirements may be granted on an individual basis by the Department of Systems and Engineering Management. Admission procedures are specified in the AFIT home page <<http://www.afit.af.mil>>.

IV. Curriculum Description

The GIR program is conducted in six academic quarters and a short term (18 total months) for DOD sponsored full-time students. The short term provides an orientation to curriculum options, a review of basic writing, economics, and mathematics skills.

The minimum curriculum satisfying the degree requirements consists of 4 **management core courses,** 5 **IRM core courses**, 3 **concentration courses**, and 12 hours of **thesis research**. Prerequisite course requirements are noted in Section V below. The **management core courses** provide important knowledge in areas that are fundamental to the study of information resource management. The management core courses include:

ORSC 542 Managerial Behavior in Organizations
OPER 501 Quantitative Decision Making
AMGT 520 Managerial Economics
SMGT 646 Project Management

The **IRM core courses** provide a thorough grounding in the concepts of information resource management. The IRM core courses include:

IMGT 530 Conceptual Foundation of Information Resource Management
IMGT 561 Database Management
IMGT 651 Systems Analysis and Design
IMGT 657 Data Communications
IMGT 690 Capstone in Information Resource Management

In accordance with customer guidance, Air Force-sponsored students are required, in addition to degree requirements, to take IMGT 560 Computer System Concepts and LOG 568, Logistics Management.

The **concentration courses** provide depth of study in a focused area of information resource management. Students must choose one 3-course concentration from alternatives established and approved by the ENV faculty curriculum committee (i.e. approved concentration are in advanced IRM and information operations). Each sequence will present a unified direction and purpose and will build depth in a specific academic area usually related to the student's research. The **thesis research**, which must address a real-world problem in an information resource management area, provides the student an opportunity to draw on the concepts of the IRM course work, and to demonstrate a mastery of one research methodology in pursuit of a research question. Typically, thesis topics are provided by DOD/USAF agencies interested in sponsoring student research in areas of practical concern. Specific elective

courses may be required by the thesis advisor to adequately prepare for the required thesis research.

In addition to degree requirements, all DOD sponsored full-time students are expected to complete an average of 12 credit hours of study per quarter over the six quarters in residence. Elective courses and additional coursework are offered and are designed to broaden the student's horizons and/or provide more in-depth knowledge in a specific area of interest.

V. Course Sequence

GIR CLASS 02M

(Suggested six quarter program for the full-time student)

SHORT SESSION FALL 00			**Credit Hours**
AMGT 337[1]	Economics Review		0
Comm 310[1]	Fundamentals of Written Communications		0
LOGM 325[1]	Quantitative Methods for Managers		0
			0

FALL 00			
STAT 526[2]	Managerial Statistics I		3
IMGT 530	Conceptual Foundations of Information Resource Management		3
ORSC 542	Mgt & Behavior in Organizations		4
SMGT 646	Project Management		3
MATH 291[2]	Business Calculus (Undergraduate)		3
			16

WINTER 01			
STAT 536[2]	Managerial Statistics II		3
IMGT 560[1]	Computer System Concepts		3
RSCH 630[1]	Research Methods		3
CSCE 525	Intro to Information Warfare (IO)	**or**	4
IMGT 684	Role of the Chief Information Officer (AIRM)		3
			12-13

SPRING 01			
IMGT 651	Systems Analysis and Design		3
IMGT 657	Data Communications		3
AMGT 520	Managerial Economics		3
CSCE 625	Info Sys Sec, Assurance and Analysis I (IO)	**or**	4
IMGT 680	Knowledge Management (AIRM)		3
			12-13

[1] Not part of degree requirements
[2] Prerequisite to required program course

SUMMER 01

IMGT 799	Thesis Research		4
IMGT 669	Business Process Reengineering (AIRM)	**or**	3
CSCE 725	Info Sys Security, Assurance and Analysis II (IO)		4
IMGT 561	Database Management		3
Elective[1]	(Advanced IRM only)		3
			11 - 13

FALL 01

IMGT 799	Thesis Research	4
LOG 568[1]	Logistics Management	3
OPER 501	Quantitative Decision Making	3
		10

WINTER 02

IMGT 799	Thesis Research	4
IMGT 690	Capstone Seminar in Information Resource Management	3
Elective[1]		3
		10

Total Units	(72 Minimum for full-time military student)	73

[1] Not part of degree requirements
[2] Prerequisite to required program course

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VI. Concentration Sequences with the Curriculum (student must choose one)

1. INFORMATION OPERATIONS

CSCE 525	Intro to Information Warfare	(*1st Winter*)
CSCE 625	Info Sys Security, Assurance and Analysis I	(*Spring*)
CSCE 725	Info Sys Security, Assurance and Analysis II	(*Summer*)

Both Joint Vision 2010 and Joint Vision 2020 recognize the information sphere as the fifth realm of modern day warfare. Information superiority is the "capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same" (JV2020). Jobs differ widely according to the requirements of the task. The information operations (IO) concentration provides for a comprehensive understanding to the defensive posture of information superiority.

Students begin the IO sequence with a comprehensive introduction to information warfare. This course provided a background in information security, theories of information warfare, psychological operations, threats to information security, hacking, and virus awareness. Students also receive an understanding of how information operations influence the nature of decision making in a command and control (C2) environment. Additional course work provides the students with an in-depth understanding of information security, assurance, and analysis. Students learn the fundamentals of encryption (both conventional and public key), steganography, information deception, and deception detection in information systems among other concepts. With a strong foundation established, students go on to examine case studies in information operations thereby receiving an understanding of real world phenomena in this rapidly growing realm of communications and information.

Students taking the Information Operations sequence often accomplish their thesis research in this area as well (however, this is not mandatory). Electives provide students with opportunities for exploration of related topics to the IO field. Topic areas such as security and ethics and human computer interaction (HCI) offer students key insight in specific subsets of IO. The IO curriculum complements the IRM and management core courses by building on concepts derived from that instruction.

Suggested Electives Related to *Information Operations*

ORSC 647	Organizational Policy and Strategic Management
ORSC 638	Seminar in Contemporary Leadership
IMGT 633	Human-Computer Interaction
IMGT 688	Security and Ethics in the Information Age

2. ADVANCED INFORMATION RESOURCE MANAGEMENT

IMGT 684	Role of the Chief Information Officer	(*1st Winter*)
IMGT XXX	Knowledge Management	(*Spring*)
IMGT 669	Business Process Reengineering	(*Summer*)

The world of information resource management has become entrenched in modern day management thinking. Many organizations, both public and private, now understand that information is a resource that is vital to their survival and continuation. As such, they have created mechanisms for the strategic management of their information. The Advanced Information Resource Management (AIRM) sequence provides for an understanding of the major mechanisms organizations have to improve their information efficiency and effectiveness.

Students begin this sequence by receiving an in-depth understanding of the role of a chief information officer (CIO) in an organization. Coursework in this realm focuses on the regulative underpinnings of this newly recognized top manager. An understanding of the role of the CIO is essential for officers who intend to pursue positions at higher echelons of the Communications and Information career field. Following the CIO course, students will receive an appreciation for the next level of IRM, knowledge management. This course provides students with the conceptualization of how information can be transformed to create new knowledge. Additionally, students learn about the challenges of successful organizational knowledge management. Students complete this sequence with an introduction to business process reengineering (BPR). Not only do they learn the underlying theoretical and conceptual foundations of this radical management endeavor, but they also learn the "tools of the trade." Often, this course is conducted in concert with a real world project to give the students a sense of relevance to this cost-saving, process integrating function. Students also receive an appreciation for the value of information and information technologies as force multipliers.

Suggested Electives Related to *Advanced Information Resource Management*

ORSC 647	Organizational Policy and Strategic Management
IMGT 688	Security and Ethics in the Information Age
IMGT 633	Human-Computer Interaction
ORSC 638	Seminar in Contemporary Leadership
ORSC 652	Personnel Management